## REMARKS

None of the claims are amended. No claims are canceled or added. Accordingly, after entry of this Response, claims 1-9 will remain pending.

Claims 1-9 are pending and rejected under 35 U.S.C. § 103(a) as being unpatentable over Yamasaki et al. (U.S. Patent No. 6,357,753) in view of Nitinol (Kauffman et al., "The Story of Nitinol: The Serendipitous Discovery of the Memory Metal and Its Applications," The Chemical Educator, Vol. 2, No. 2, 1996). Applicant respectfully disagrees with the rejection and, therefore, respectfully traverses the same.

In the Office Action, the Examiner states that Yamasaki et al. "discloses the substantially as claimed above but fails to disclose that the at least one of the first additional part arranged to transfer the rotation torque of at least one of the shaft and the second additional part receiving torque is memory elastic metal (e.g., Nitinol)." (The Office Action at page 3, lines 18-21.) The Examiner referred to the Nitinol reference because it teaches the use of Nitinol as a connection between two elements. (Nitinol at page 10.) While the Applicant understands the combination that the Examiner has applied against the claims, the Applicant respectfully disagrees with the rejection.

Claims 1-9 are distinguishable from the references because they recite, among other features, at least one of the first additional part arranged to transfer the rotation torque of at least one of the shaft and the second additional part receiving torque is a super elastic memory metal element arranged to bend within the limits of the reversible deformation of the material. The Applicant respectfully argues that this combination of features, among others, is neither disclosed nor suggested by the references relied upon by the Examiner. As a result, the Applicant respectfully submits that the rejection must be withdrawn.

There are at least two reasons for which the Examiner's rejection cannot be maintained. First, the structure of the seal described in Yamasaki et al. is such that those skilled in the art would not think to use a memory material as a first additional part or a second additional part. Second, there is nothing in Yamasaki et al. that would suggest the use of a memory material. To the contrary, the reference describes and, thereby, suggests the use of non-memory materials. As a result, the rejection cannot be maintained.

Yamasaki et al. describes a mechanical seal with a stationary seal ring 7 and a rotary seal ring 35. (Yamasaki et al. at col. 5, line 20, and at col. 6, line 25.) The stationary seal ring 7 includes a cylindrical holder 21 and an annular seal ring element 22, both of which are held within the inner circumferential portion of the cylindrical case block 13 by means of an O ring 23 and a drive pin 24. (Yamasaki et al. at col. 5, lines 20-24.) The rotary seal unit 4 comprises a sleeve 34 placed around the rotary shaft 2, a rotary seal ring 35 fixed on the sleeve 34, and a stopper ring 36 to fix the sleeve 34 onto the rotary shaft 2. (Yamasaki et al. at col. 6, lines 24-27.)

The Applicant respectfully emphasizes that the O ring 23 and the **drive pin 24** are the enumerated structures that retain the stationary seal ring 7 within the case block 13. (Yamasaki et al. at col. 5, lines 20-24.) With respect to the rotary seal ring 35, an O ring 44 and a **drive pin 45** hold the rotary seal ring 35 in place in a rear end portion 40 of the sleeve 34. (Yamasaki et al. at col. 6, lines 37-41.)

The Applicant respectfully submits that the drive pins 45 and 24 are the features in Yamasaki et al. that appear to be analogous to the first and second additional parts, respectively, as recited by the claims. With reference to Fig. 1, the drive pin 24 appears to be an integral part of the case block 13. Similarly, it appears that the drive pin 45 is an integral part of the rear end portion 40 of the sleeve 34. As a result, the Applicant respectfully submits that the drive pins 45 and 24 are likely made from the same materials as the rear end portion 40 of the sleeve 34 and the case block 13. The Applicant further adds that there appears to be no discussion in Yamasaki et al. of the materials that comprise the case block 13 or the end portion 40 of the sleeve 34. Accordingly, the Applicant respectfully submits that no conclusions may be drawn as to the elastic memory properties of the materials comprising these elements.

In addition, the Applicant respectfully submits that it is likely that the case block 13 and the rear end portion 40 of the sleeve 34 are made from a material such as steel, which is not commonly defined as an elastic memory material. Without any discussion of the material that comprises the case block 13, the rear end portion 40 of the sleeve 34, the drive pin 45, or the drive pin 24, it is only by speculation that one skilled in the art would be lead to an elastic memory material for these components. The absence of any discussion of the materials employed for these components in Yamasaki et al. would, in fact, tend to lead those skilled in the art away from the combination recited by the claims of the present patent application.

In the Office Action, the Examiner likened the rear end portion 40 of the sleeve 34 in Yamasaki et al. with the first additional part of the claims of the present invention. Similarly, the Examiner equated the cylindrical holder 21 with the second additional part. The Applicant respectfully disagrees with this analysis. The Applicant believes that the drive pin 45 is analogous to the first additional part and that the drive pin 24 is analogous to the second additional part. As discussed above, since the materials that comprise the drive pins 45, 24 are not enumerated, the Applicant respectfully submits that there is no suggestion in Yamasaki et al. to rely on any particular material for the construction of the drive pins 45 and 24. At least for this reason, those skilled in the art would not be lead to employ an elastic memory material.

Even if the interpretation of Yamasaki et al. asserted by the Examiner is followed, the Applicant respectfully submits that those skilled in the art would not be lead to any construction where the identified elements are made from an elastic memory material. Following the Examiner's interpretation, the rear end portion 40 of the sleeve 34 is comparable with the first additional part of the claims of the present invention and the cylindrical holder 21 is comparable to the second additional part. In Yamasaki et al., the cylindrical holder 21 is made from metal such as **titanium**. (Yamasaki et al. at col. 5, line 30.) The annular seal ring element 22 is made from **ceramic**, **hard metal**, **carbon** or the like, with **silicon carbide** being specifically identified. (Yamasaki et al. at col. 5, lines 27-31.) The material that makes up the case block 13 or the rear end portion 40 of the sleeve 34 is not identified.

With this in mind, the Applicant respectfully submits that the only material identified for the cylindrical holder 21 is **titanium**. While titanium may be combined with nickel to create Nitinol, an elastic memory material, titanium is not considered to be an elastic memory material. There is nothing in Yamasaki et al. to suggest that the titanium for the cylindrical holder should be modified to create an elastic memory material such as Nitinol. In addition, as noted above, there is no indication what material is used to make the rear end portion 40 of the sleeve 34.

Regardless of the structures in Yamasaki et al. that are compared with the first and second additional parts recited by the claims of the present patent application, there is simply no support for relying on an elastic memory material for those elements. Either Yamasaki et al. fails to identify any specific material or it identifies titanium. Regardless of the interpretation applied, Yamasaki et al. simply fails to suggest reliance on any elastic memory materials. For this reason, the Applicant respectfully submits that the rejection must fail.

The Applicant recognizes that the Nitinol reference describes a number of uses for the elastic memory material. It appears to the Applicant, however, that the Examiner is applying the Nitinol reference in combination with Yamasaki et al. based solely on **hindsight reconstruction** of the claims, which is impermissible. There is nothing in Yamasaki et al. that would suggest the use of an elastic memory material. To the contrary, where provided, the reference describes materials (e.g., titanium) that do not possess elastic memory properties. The mere fact that memory materials existed at the time that the present invention or that elastic memory materials may be used for a wide variety of purposes provides insufficient basis for the combination of the references as now asserted by the Examiner.

The only suggestion for the combination asserted by the Examiner is found within the Applicant's own disclosure. As explained in Applicant's specification, the problem with prior art mechanical shaft seals is that the additional parts transferring torque from the shaft of the device and/or additional parts receiving the torque included in the shaft seal are subjected to wear or are broken at the points, from which torque is transferred from one part to another, for instance to the sliding surface parts. The same problem occurs with the parts intended to be non-rotating at points, from which the non-rotating parts are locked to the device or to a separate frame part. The torque caused by frictional force formed between the plane surfaces of the non-rotating parts and the rotating parts in the mechanical shaft seal wears and breaks the additional parts that serve to transfer the rotating motion of the device shaft to the rotating parts of the mechanical seal, or which tend to be used for preventing the rotating motion produced by the torque caused by the frictional force in the non-rotating parts of the mechanical shaft seal.

This phenomenon causes the mechanical shaft seal to be prematurely damaged in such a manner that the mechanical seal no longer operates as planned for sealing the gap between the rotating shaft and the static parts of the device. Additionally, the torque causes the sliding surfaces of the sliding surface parts in the mechanical seal to deform so that the mechanical seal no longer operates as intended. To address this problem, among others, the Applicant turned to elastic memory materials for the first and second additional parts. It appears that the Examiner has relied on this disclosure to fashion the rejection of the claims now asserted. The Applicant respectfully submits that this hindsight reconstruction is improper. At least for this reason, the Applicant respectfully requests that the rejection be withdrawn.

In view of the foregoing, therefore, the Applicant respectfully submits that claims 1-9 are patentable over Yamasaki et al. and Nitinol and the rejection should be withdrawn.

For all of the above reasons, withdrawal of the rejection of the pending claims is respectfully requested. In view of the above, it is submitted that all of the pending claims are in condition for allowance and such action is respectfully requested.

If there is any issue remaining to be resolved, the examiner is invited to telephone the undersigned at (202) 371-6371 so that resolution can be promptly effected.

It is requested that, if necessary to effect a timely response, this paper be considered a Petition for an Extension of Time sufficient to effect a timely response with the fee for such extensions and shortages in other fees, being charged, or any overpayment in fees being credited, to the Account of Barnes & Thornburg LLP, Deposit Account No. **02-1010** (44655-356508).

Respectfully submitted,

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